CLAIMS

1. A method for implementing a signalling bearer connection in a distributed radio access network, characterised in that the method comprises the steps of:

creating a first interface instance (Iu, Iur) between an interworking unit (IWU) and at least one of the networks selected from a group of networks comprising a core network (CN) and a neighbouring radio access network (RAN),

creating a second interface instance (Iu', Iur') between said interworking unit and a set of base stations (IP BTS),

assigning temporary identifier information to user equipment (UE) that has a connection to a base station (IP BTS), and

mapping of the signalling traffic between said first and said second interface instances in said interworking unit, said mapping assigning signalling traffic from said first interface instance to said second interface instance based on said temporary identifier information.

2. The method according to claim 1, characterised in that the method further comprises the step of creating a signalling bearer connection for a user equipment (UE) through said first and second instances (Iu, Iur; Iu', Iur').

3. The method according to claim 1, characterised in that mapping of the signalling traffic comprises translating a transport address from the form used in said first interface instance (Iu, Iur) to the form used in said second interface instance (Iu', Iur').

4. The method according to claim 1, characterised in that mapping of the signalling traffic comprises translating a transport address from the form used in said second interface instance (Iu', Iur')

to the form used in said first interface instance (Iu, Iur).

5. The method according to claim 1, characterised in that mapping of the signalling traffic comprises translating a signalling protocol of said first interface instance (Iu, Iur) to a signalling protocol of said second interface instance (Iu', Iur').

6. The method according to claim 1, characterised in that mapping of the signalling traffic comprises translating a signalling protocol of said second interface instance (Iu', Iur') to a signalling protocol of said first interface instance (Iu, Iur).

7. The method according to claim 1, characterised in that mapping of the signalling traffic comprises transmitting said signalling traffic transparently through said interworking unit between said first and second instances (Iu, Iur; Iu', Iur').

8. The method according to claim 1, characterised in that the method further comprises the step of composing said identifier information in a three-part form wherein the first part identifies said interworking unit (IWU), the second part identifies said base station (IP BTS) and the third part identifies said user equipment (UE).

9. The method according to claim 1, characterised in that the method further comprises the steps of:

assigning a unique address to said interworking unit (IWU), and

addressing said set of base stations (IP BTS), which has been connected to said interworking unit (IWU) with said unique address.

10. The method according to any one of the preceding claims, characterised in that the method further comprises the step of controlling user plane traffic by said interworking unit (IWU).

11. A system for implementing a distributed radio access network comprising

a set of base stations (IP BTS), and
at least one of the following networks: a core network (CN), and a neighbouring radio access network (RAN), c h a r a c t e r i s e d in that said system further comprises:
an interworking unit (IWU) for connecting said core network (CN) to said set of base stations (IP BTS) and to at least one of said networks, said interworking unit comprising:

a first interface instance (Iu, Iur) between said interworking unit and at least one of said networks,

a second interface instance (Iu', Iur') between said interworking unit a set of base stations (IP BTS), and

a mapping unit (MU) for mapping the signalling traffic between said first and said second interface instances, said mapping assigning signalling traffic from said first interface instance to said second interface instance based on temporary identifier information associated with a user equipment.

12. The system according to claim 11, c h a r a c t e r i s e d in that said interworking unit (IWU) is implemented in a radio access network server (RNAS).

13. The system according to claim 12, c h a r a c t e r i s e d in that radio access network server (RNAS) controls the functions of radio access network gateway (RNGW) and circuit switched gateway (CSGW).

14. The system according to claim 11, c h a r a c t e r i s e d in that said interworking unit (IWU) is connected to a set of base stations (IP BTS), and that said set of base stations (IP BTS) is addressed as one logical interworking unit (IWU).

15. The system according to claim 14, c h a r a c t e r i s e d in that said interworking unit (IWU) is assigned a unique network address for addressing said set of base stations (IP BTS) and that the signalling

connection is terminated in said interworking unit (IWU).

16. The system according to claim 11, characterised in that said interworking unit (IWU) further comprises a transport address entity (TAE) for translating the transport addresses from the form used in said first interface instance (Iu, Iur) to the form used in said second interface instance (Iu', Iur'), and vice versa.

17. The system according to claim 11, characterised in that said interworking unit (IWU) further comprises a protocol entity (PE) for translating the protocols of said first interface instance (Iu, Iur) to the protocols of said second interface instance (Iu', Iur'), and vice versa.

18. The system according to claim 11, characterised in that said base station (IP BTS) is equipped with radio access control equipment.

19. An Interworking unit connected to at least one of the following networks: a core network (CN), and a neighbouring radio access network (RAN), and to a set of base stations (IP BTS) in a distributed radio access network, characterised in that said interworking unit (IWU) comprises:

a first interface instance (Iu, Iur) between said interworking unit and at least one of said networks,

a second interface instance (Iu', Iur') between said interworking unit and a set base stations (IP BTS) which has been equipped with radio access control equipment, and

a mapping unit (MU) for mapping the signalling traffic between said first and said second interface instances, said mapping assigning signalling traffic from said first interface instance to said second interface instance based on temporary identifier information associated with a user equipment, whereupon said interwork-

ing unit functions as a logical radio network controller.

20. The interworking unit according to claim 19, characterised in that a first interface instance (Iu, Iur) is created between said interworking unit (IWU) and said core network (CN).

21. The interworking unit according to claim 19, characterised in that a first interface instance (Iu, Iur) is created between said interworking unit (IWU) and a neighbouring radio network controller (RNC).

22. The interworking unit according to claim 19, characterised in that a first interface instance (Iu, Iur) is created between said interworking unit (IWU) and a neighbouring base station controller (BSC).

23. The interworking unit according to claim 19, characterised in that a second interface instance (Iu', Iur') is created between said interworking unit and a set base stations (IP BTS).

24. The interworking unit according to claim 19, characterised in that said first and second interface instances (Iu, Iur; Iu', Iur') are terminated in said interworking unit (IWU).

25. The interworking unit according to claim 19, characterised in that said interworking unit (IWU) further comprises a transport address entity (TAE) for translating the transport addresses from the form used in said first interface instance (Iu, Iur) to the form used in said second interface instance (Iu', Iur'), and vice versa.

26. The interworking unit according to claim 19, characterised in that that said interworking unit (IWU) further comprises a protocol entity (PE) for translating the protocols of said first interface instance (Iu, Iur) to the protocols of said second interface instance (Iu', Iur'), and vice versa.